

JAPAN

EDICT OF GOVERNMENT

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JIS B 6519 (1990) (English): Test methods for performance and accuracy of band scroll saws

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*The citizens of a nation must
honor the laws of the land.*

Fukuzawa Yukichi

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JAPANESE INDUSTRIAL STANDARD

Test methods for
performance and accuracy
of band scroll saws

JIS B 6519—1990

Translated and Published

by

Japanese Standards Association

In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

JAPANESE INDUSTRIAL STANDARD

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Test methods for performance and
accuracy of band scroll saws

B 6519-1990

1. Scope

This Japanese Industrial Standard specifies test methods for function, running performance and rigidity of band scroll saws specified in JIS B 0114 of not more than 1000 mm in diameter of saw wheel as well as inspection methods of static accuracy and working accuracy.

Remarks 1. Applicable Standards to this Standard are shown in the following:

JIS B 0114 Glossary of Terms for Wood Working Machinery

JIS B 6507 General Code of Safety for Wood Working Machinery

JIS B 6521 Method of Measurement for Noise Emitted by Wood Working Machinery

2. The corresponding International Standard corresponding to this Standard is shown in the following:

ISO 7007 Woodworking machines - Table bandsawing machines
- Nomenclature and acceptance conditions

3. In this Standard the units and numerical values shown in { } are in accordance with traditional units and are appended for informative reference.

2. Test Methods for Function

The tests for function of band scroll saws are in accordance with Table 1.

Reference Standards:

JIS B 6501-Test Code for Performance and Accuracy of Wood Working Machinery

JIS Z 8203-SI Units and the Use of their Multiples and of Certain other Units

Table 1. Test for Function

| Num- ber | Test item | Test method |
|-------------|--|---|
| 1 | Electric apparatus | Carry out the test for insulation condition each once before and after running test. |
| 2 | Regulating operation of band scroll saw | Stretch the band scroll saw, rotate the saw wheel with hand in positive and reverse direction, and test the smoothness and security of apparatus to regulate the tensile force and inlet and outlet of band scroll saw. |
| 3 | Operation of tension apparatus of band scroll saw | Test the security of markings of smoothness of function, sensitivity and degree of tension. |
| 4 | Operation of trap apparatus | Test the smoothness and security of function of trap apparatus. |
| 5 | Operation of inclination apparatus of upper part saw wheel | Test the security of regulating function of band scroll saw teeth inlet and outlet by starting the saw wheel ⁽¹⁾ . |
| 6 | Operation of starting, stopping of saw wheel and braking apparatus | Attach the band scroll saw, repeat the operation of starting and stopping several times, actuate the braking apparatus and test the smoothness and security of the actuation. |
| 7 | Converting operation of main spindle rotary speed | Relating to all rotary speeds of marking, convert the main spindle rotary speed and test the smoothness of actuation and security of indication of operation apparatus. |
| 8 | Operation of specified regulation | Test the smoothness and security of regulating apparatus of squareness to table and parallelism to feed direction as well as the drawing-width regulating apparatus. |
| 9 | Safety device | Test the safety function to the worker and security of machine-protective function (Refer to JIS B 6507). |
| 10 | Lubricating device | Test the security of function such as oiltightness, suitable distribution of oil quantity, etc. |
| 11 | Accessories | Test the security of function. |

Note ⁽¹⁾ Use the band scroll saw of good working finish.

Remark: As to the band scroll saw having no such function, the test item corresponding thereto in Table 1 is omitted.

3. Test Method for Running

3.1 Test Method for No-load Running Continue the running, after the bearing temperature has been stabilized, measure relating to each item specified in Record Format 1 of Table 2, record it as well as observe that there is no abnormal vibration by feeling.

Further, the measurement of noise shall be in accordance with JIS B 6521.

Table 2. Recording Format 1

| Num- ber | Meas- uring time | Rotary speed of main spindle min^{-1} (rpm) | | Temperature °C | | | Required power | | | Noise dB (A) | Description |
|-------------|------------------------|---|----------------------------|-------------------------|-------|--------------------------|-----------------------|-----------------------|----------------------|------------------------|-------------|
| | | | | Main spindle bearing | | Room temper- ature | Vol- tage V | Cur- rent A | In- put kW | | |
| | h min | Mark- ing | Actual meas- urement | Upper | Lower | | | | | | |
| | | | | | | | | | | | |

- Remarks 1. The band scroll saw having speed change gear of main spindle rotary speed shall be recorded relating to the rotary speeds of two levels at least containing the maximum rotary speed.
2. Relating to the noise measuring conditions record in the description column.

3.2 Load Running Test Carry out cutting of test member, measure relating to each item specified in Record Format 2 of Table 3, and record as well as observe the absence of abnormal vibration and condition of cut surface by feeling.

Further, the measurement of noise shall be in accordance with JIS B 6521.

For the measurement of required electric power, make the feed speed a definite speed, change the drawing width or make the drawing width a definite speed, and change the feed speed to carry out the test.

Table 3. Record Format 2

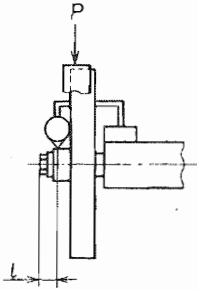
| Number | Test member | | | | Tool | | | | Cutting conditions | | | | Required power | | | | | Noise dB (A) | Description | | |
|--------|-----------------------|--------------------------|----------------------|-----------------------------------|-----------------------|-------------|-------------|-------------|--------------------|---------------|--|--|-------------------------------------|-----------------------------|-----------------------|-----------------------|------------------------------------|-----------------|-------------|--|------------------------------|
| | Dimension | | | Kind of tree or kind of member | Water content rate | Thickness | Width | Pitch | Saw width | Tooth profile | Main spindle rotary speed min^{-1} (rpm) | Cutting speed m/min | Feed speed m/min | Sawing width mm | Voltage V | Current A | Input | | | Cutting power $P_1 - P_0$ kW | |
| | Length mm | Thickness mm | Width mm | | | | | | | | | | | | | | No load P_0 kW | | | | Load P_1 kW |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | % | mm | mm | mm | mm | At- tached | | | | | | | | | | | |

- Remarks 1. Relating to noise measuring conditions, those shall be recorded in the description column.
2. The tooth profile shall be indicated in figure and described with main dimensions.

4. Test Method for Rigidity

The test for rigidity of band scroll saws shall be in accordance Table 4.

Table 4. Test for Rigidity

| Num-ber | Test item | Measuring method | Measuring method diagram |
|---------|---|---|---|
| 1 | Bending rigidity of main spindle series | After adding a suitable stretching force ⁽²⁾ to the band saws attached to the upper and lower saw wheels, apply the test indicator to the tip part (side surface) ⁽³⁾ of main spindle as shown in diagram, apply the load (P) to the upper most part of saw wheel ⁽⁴⁾ , and measure the deflection of main spindle. Carry out this measurement relating to main spindles of upper saw wheel and lower saw wheel. |  |

Notes ⁽²⁾ The suitable stretching force shall be the stretching force required to the band saw of usable to the machine.

⁽³⁾ Make the gauge head of test indicator at the position as near to main spindle end as possible, and record the distance from main spindle in Record Format 3 of Table 5.

⁽⁴⁾ Make the load (P) the size recommended by the manufacturer, and record the value in Record Format 3 of Table 5.

Remarks 1. The test for rigidity of machines of the same design shall be represented by the test results carried out relating to a representative one unit and relating to others, it may be omitted.

2. Use the band saw recommended by the manufacturer.

Table 5. Record Format 3

| Num-ber | Tool | | | | Stretching force of band saw N/mm^2 $\{\text{kgf/mm}^2\}$ | Load (P) $\text{N} \{\text{kgf}\}$ | Distance from main-spindle end to test indicator mm | Deflec-tion mm |
|---------|---------------------------|--------------------------|-------------------------------|-----------|--|--|---|--------------------------------|
| | Length mm | Width mm | Thick-ness mm | Mate-rial | | | | |
| | | | | | | | | |

5. Inspection Method for Static Accuracy

The inspection for static accuracy of band scroll saws shall be in accordance with Table 6.

Table 6. Inspection for Static Accuracy

Unit: mm

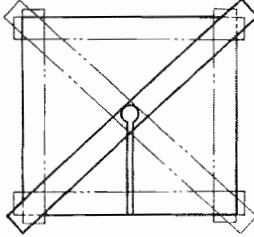
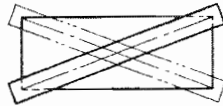
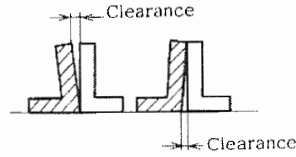
| Number | Inspection item | Measuring method | Measuring-method diagram | Permissible value |
|--------|--|--|---|-------------------|
| 1 | Straightness of upper surface of table | Place a straightedge on the upper surface of table on the diagonal line, in the lateral direction and longitudinal direction, measure the clearance with a feeler gauge and take the maximum value as the measured value. |  | 0.25 per 500 |
| 2 | Straightness of gauge surface | Place a straightedge on the gauge surface on the diagonal line, measure the clearance with a feeler gauge, and take the maximum value as the measured value. |  | 0.30 per 500 |
| 3 | Squareness of gauge surface and upper surface of table | Place a square on the upper surface of table, apply this to the gauge surface and measure the clearance with a feeler gauge. Carry out this measurement at three places of front part, middle part and rear part in the feed direction, and take the most large value out of them as the measured value. |  | 0.20 per 100 |

Table 6 (Continued)

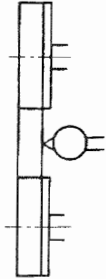
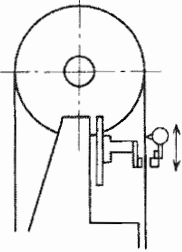
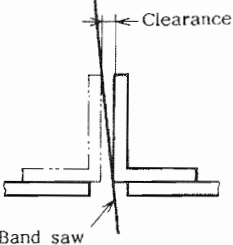
Unit: mm

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| Num-ber | Inspection item | Measuring method | Measuring-method diagram | Permissible value |
|---------|---|---|--------------------------|--|
| 4 | Alignment of upper and lower saw wheels | Apply a straightedge to the upper and lower saw wheels as shown in measuring-method diagram, measure the clearance with a feeler gauge, and take the maximum value as the measured value. | | For diameter (D) of saw wheel not more than 600, 0.30 For diameter (D) of saw wheel exceeding 600, 0.40 |
| 5 | Run-out of outer periphery surface of saw wheel | Apply a test indicator to the outer periphery surface of saw wheel, rotate the saw wheel by hand, and take the maximum difference of readings of test indicator during rotation as the measured value. Carry out this measurement relating to outer periphery surfaces of upper and lower saw wheels. | | For diameter of saw wheel not more than 600, 0.10 For diameter of saw wheel exceeding 600, 0.15 |
| 6 | Run-out in axial direction of saw wheel | Apply a test indicator to side surface of outer ring of saw wheel, rotate this saw wheel by hand, and take the maximum difference of readings of test indicator as the measured value. Carry out this measurement relating to outer rings and side surfaces of upper and lower saw wheels. | | For diameter of saw wheel of not more than 600, 0.20 For diameter of saw wheel exceeding 600, 0.30 |

Table 6 (Continued)

Unit: mm

| Number | Inspection item | Measuring method | Measuring-method diagram | Permissible value |
|--------|---|--|---|---|
| 7 | Going in-and-out of band saw | Apply a test indicator to saw back of band saw ⁽⁵⁾ , rotate the saw wheel by hand, obtain the maximum difference of readings of test indicator during one time rotation of band saw. Carry out this measurement thrice or more, and take the maximum value of them as the measured value. |  | For diameter of saw wheel of not more than 600, 0.40 For diameter of saw wheel exceeding 600, 0.60 |
| 8 | Parallelism of trap guide surface and band saw surface | Apply a test indicator attached with the trap arm to the band saw surface, make the trap arm up and down, and take the maximum difference of readings of test indicator as the measure value. |  | For diameter of saw wheel of not more than 600 per 100, 0.30 For diameter of saw wheel exceeding 600 per 100, 0.40 |
| 9 | Squareness of band saw surface and upper surface of table | Place a square on the upper surface of table, apply this to the band-saw surface, measure the clearance with a feeler gauge and take the maximum value as the measured value. |  | 0.10 per 200 |

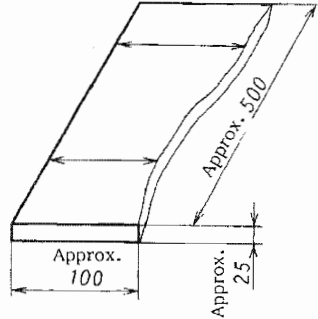
Note ⁽⁵⁾ The band saw is to be that recommended by manufacturer.

6. Inspection Method for Working Accuracy

The inspection for working accuracy of band scroll saws shall be in accordance with Table 7.

Table 7. Inspection for Working Accuracy

Unit: mm

| Num-ber | Inspection item | Measuring method | Measuring-method diagram | Permissible value |
|---------|----------------------------------|--|---|-------------------|
| 1 | Accuracy of width ⁽⁶⁾ | Apply a test member to a gauge, after cutting the end face ⁽⁷⁾ other than butt end, measure the maximum difference of cutting widths of test member with a vernier callipers and take the maximum difference as the measured value. |  | 0.25 per 500 |

Notes ⁽⁶⁾ This does not apply to the band scroll saws using exclusively the thin band saw and rotating band.

⁽⁷⁾ The surface of member of narrow width.

Remarks 1. The test member shall be executed with preliminarily required preworking.

2. The band saw recommended by manufacturer shall be used.

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Edition 1

Japanese Text

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